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ABSTRACT

This manual provides the information needed to conduct a job analysis and to enter or update job analysis information in the Computerized Task Inventory (COMTASK) database. Chapter I presents the purpose and organization of the manual. The second chapter provides a brief background on the purpose and design of COMTASK, a definition of terms used in COMTASK, and scenarios that illustrate some possible uses of COMTASK. Procedures for conducting a job analysis are detailed in chapter III. Methods of job analysis, the development of a job/task inventory, and administration of the questionnaires are outlined so that the user can follow the processes and enter the results of an analysis into the COMTASK system. Chapter IV gives guidelines for writing duty, task, and equipment statements. Appendixes, amounting to over one-half of the manual, include a sample job/task inventory, input specifications and tips, a sample questionnaire instrument developed from the sample job task inventory, sample Company Consent Forms and Company Demographic Data Forms, addresses of job analyses information, and a workbook supplement that follows the steps in the manual. (YLB)

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Procedures for Conducting a Job Analysis: A Manual for the COMTASK Database

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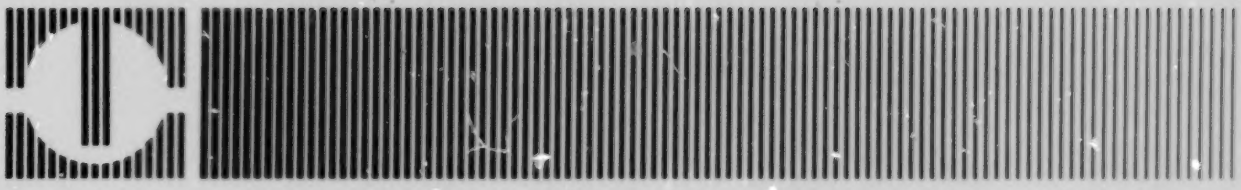

OFFICE FOR RESEARCH IN HIGH TECHNOLOGY EDUCATION
The University of Tennessee College of Education

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Procedures for Conducting a Job Analysis: A Manual for the COMTASK Database

by

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Foreword

The Computerized Task Inventory (COMTASK) Project at the University of Tennessee is designed to take advantage of advances in computer databases, the need for current job analysis information, and the ease of retrieving information with a computer. As part of COMTASK, a job analysis database has been designed to build upon existing job analysis procedures and information.

As a job changes, tasks and equipment that are part of the job's requirements may also change. Similarly, skills acquired by people working at that job also change. Thus, the COMTASK database is designed to allow job information to be modified to reflect these changes in tasks, equipment, or workers' characteristics.

The COMTASK Project staff work centered on three related activities: the development of a database and the generation of two accompanying documents. The computer program to access the database was designed so information could be retrieved and so new information could be added or existing information could be modified.

The document titled User's Guide explains how to access the database to retrieve, add, or modify information. The manual describes how a job analysis should be conducted, and how the information should be structured for entry into the COMTASK database. The manual is designed to be used by those who want to conduct job analyses. It contains the COMTASK process for gathering job information and the guidelines to be used for gathering current information about jobs.

This document is the manual for job analysis. Every attempt has been made to make the procedures for conducting a job analysis useable, practical, and easy to follow. Four different groups tested the early drafts of the manual and their suggestions used in the revisions. A suppliement to the manual provides further assistance to users. All of the above involved much time, thought, and effort on the part of the staff, the field test personnel, and the advisory group. A list of all contributers is given in the Acknowledgments. The goals of COMTASK have been achieved as a result of this combined effort.

Abstract

The purpose of this manual is to provide instruction in procedures for conducting a job analysis. The approach is to outline steps, via a flow chart, in collecting qualitative and quantitative data about duties, tasks, and equipment required by a particular job. All information elements are then entered as directed in the Computerized Task Inventory (COMTASK) database and periodically reviewed and updated to determine changes in job content. The expected results of the COMTASK database are (1) orderly retrieval, and (2) up-to-date information availability of job requirements.

ACKNOWLEDGMENTS

Among the many that have contributed to the development of the COMTASK manual, special appreciation is expressed to two very important members of COMTASK, Dr. John Peterson and Dr. Walter Cameron for their contributions toward the design and developed of this manual.

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CHAPTER I

INTRODUCTION

Purpose of the Manual

Job analysis is a process used: (1) to identify and describe the tasks and essential elements of a job, and (2) to gather data about the people who work at that job. This manual provides the information needed to conduct, input, and/or update job analyses information for the Computerized Task Inventory (COMTASK) database.

The COMTASK database is used to store data on jobs. Users of COMTASK can input or retrieve information about those jobs.

An orderly procedure is required for conducting a job analysis. Certain steps which lead to systematic procedures, as well as simplicity, are necessary. When these steps are followed carefully the results will yield a practical and thorough inventory of job information. After a job analysis is completed, it should be reviewed periodically to determine the affects of technological and/or other changes on the job. The COMTASK process steps facilitate job analysis updates. (For more information about job analysis, see the Bibliography.)

Organization of the Manual

This manual is divided into four chapters. The first chapter presents the purpose and organization of the manual. The second chapter provides a brief background on the purpose and design of COMTASK, a definition of terms used in COMTASK, and scenarios which illustrate some possible uses of COMTASK. The third chapter details procedures for conducting a job analysis. Methods of job analysis, the development of a job/task inventory, and administration of the questionnairesare outlined so that the user can follow the process and enter the results of an analysis into the COMTASK system. The final chapter gives guidelines that should be followed when writing duty and task statements. It also provides some rules for identifying equipment.

Six appendices are provided. Appendix A contains the job/task inventory for the occupation of word processor, which the COMTASK staff used as a prototype. Appendix B details the specifications for developing the job/task inventory, and provides tips needed to make your job/task inventory consistent with the COMTASK database. Appendix C is a sample questionnaire developed from the job/task inventory for word processor. It contains an Individual Worker Consent Form, the Worker Background Information Sheet, and a Sample Questionnaire. Appendix D illustrates the Company Consent Forms and Company Demographic Data to be completed by managers or supervisors. Appendix E gives the addresses of places where you can get job analyses information. Appendix F is a workbook supplement that follows the steps in the manual. The workbook supplement is included for your convenience to organize your job information so that it is consistent with each step in the input process of COMTASK.

CHAPTER II

THE COMTASK SYSTEM

Purpose and Design

The purpose of COMTASK (acronym for Computerized Task Inventory) is to develop and make available job analysis information. The major features of COMTASK are the capabilities to enter, update, and retrieve information about the duties, tasks, and equipment associated with one or more occupations. Information can be entered on jobs for which no data exists in the COMTASK database. New information would begin with a list of the duties, tasks, and equipment associated with a job. It would continue with data on worker performance. Updated information may be in the form of revised job analyses to add data about current tasks or equipment for jobs already in COMTASK, or deleting tasks no longer performed. Information retrieval may include: (a) entire task lists, (b) equipment lists, (c) percentage of people performing certain tasks, or (d) percentage of people using certain types of equipment for one or several jobs.

COMTASK is a computerized system for job/task inventories. COMTASK can play an important role in helping design programs to prepare workers by providing educators, trainers, and other users with up-to-date information about skill requirements.

COMTASK has four major objectives:

- To provide a basis for up-to-date information about jobs
- To devise an input system
- To create a system that includes a quality control function and that permits updating of job analyses information already in COMTASK
- To develop a system that includes an analysis of the basic tasks required to perform jobs

The COMTASK database is designed to be "user-friendly." This manual will assist an individual in conducting a job analysis and inputting the results into COMTASK. A companion document, the COMTASK User's Guide, shows how to obtain and use information currently stored in COMTASK.

Definitions of Terms Used in COMTASK and This Manual

CIP - Acronym for Classification of Instructional Programs. six-digit code with a three-level hierarchical system that provides a common language for describing instructional programs.

COMTASK - Acronym for the Computerized Task Inventory developed at the University of Tennessee - Knoxville. It consists of two parts: (a) The COMTASK database, and (b) the COMTASK process.

COMTASK Database - A computerized database that stores the results of job/task analyses information. Information in the database can be retrieved by using the instructions in the COMTASK User's Guide.

COMTASK Process - A method developed and used by COMTASK to gather information about jobs.

Content Analysis - The process of reviewing and analyzing all the items in a specific document.

D.O.T. Code - A nine-digit number assigned to a job title in the United States Department of Labor's Dictionary of Occupational Titles.

Duty - A distinct group of tasks in a job which are related to each other by the nature of work to be performed.

Equipment - An apparatus on a piece of machinery that is used in the performance of a job.

Job - The composite of duties actually performed by one individual.

Job Analysis - A process whereby a job is divided into its component parts and these parts are studied to create a job/task inventory.

Job/Task Inventory - A comprehensive list of duties, tasks, and equipment required of a worker necessary to accomplish a designated job or set of jobs.

Occupational Analysis - The process of dividing an occupation into its component parts. The analysis may include job analysis and task analysis.

Occupational Area - A group of job titles that are related on the basis of required skills and knowledge.

Performance Standards - A statement which defines in measurable terms the level of performance to be exhibited by a worker under specific and stated conditions.

Task - A unit of work that constitutes a necessary step in the performance of a job and has a definite beginning and end.

Task Analysis - The process of dividing a task into its component parts including cognitive, psychomotor, and affective skills or knowledge; working conditions; equipment; and performance standards.

Possible Uses for COMTASK

COMTASK can be used in many different ways to provide a variety of information. The following four scenarios are examples that illustrate the potential use of the COMTASK System.

Scenario 1

Problem:

The management of a major farm machinery plant wishes to automate its design and manufacturing operations by installing a CAD/CAM system. The management is concerned about retraining present employees to operate the new system.

Solution:

A COMTASK search is conducted. A job/task inventory for CAD/CAM equipment operators is located. The inventory includes a list of duties and tasks performed by CAD/CAM equipment operators and cognitive skills required to perform the tasks. A list of equipment is provided, as well as the percentage of people surveyed who use each piece of equipment and the percentage of people surveyed who perform each task.

The training division of the plant is now able to develop a training program based on information received from COMTASK. The trainers can analyze the new skills needed and determine the type and length of training period necessary to retrain present employees for CAD/CAM.

Scenario 2

Problem:

Office automation systems are dramatically changing the office environment and, consequently, the skills needed by office workers. The business education curriculum committee at a community college wishes to redesign the curriculum for business education training.

Solution:

COMTASK is searched to determine the available list of duties, tasks, and equipment associated with automated offices. The curriculum committee is able to design new course offerings based on updated information of required tasks and equipment in this area.

Scenario 3

Problem:

A company has experienced many changes in jobs and the nature of certain jobs because of recent technological advances. The company's personnel department believes that job descriptions and performance standards for many positions should be revised. They are willing to invest time and resources in order to conduct a job analysis of certain jobs.

Solution:

COMTASK is searched to see if the database already contains any job analyses for the jobs in question. Those available are used as a basis for the personnel department to conduct a job analysis; the results are entered into COMTASK to update the analysis entry. Job analyses are also conducted for those jobs not found in COMTASK. Because the personnel department followed

the procedures outlined in the COMTASK Manual, they were able to enter these results into COMTASK as new information. Once all the job analyses are added to COMTASK, the personnel department can retrieve the data in a form to help revise personnel job descriptions.

Scenario 4

Problem:

A publisher determines there is a need to develop a mathematics book for persons working in CAD/CAM areas. The publisher wishes to supply the author with information that will help the writer develop more realistic problems.

Solution:

COMTASK is searched to obtain a list of all the tasks performed by workers in CAD/CAM areas that require specific mathematical knowledge. The results are printed by mathematical topics or specific skills, with the relevant tasks listed under each topic.

CHAPTER III

THE COMTASK PROCESS

Introduction

The COMTASK Process is a method of gathering information about jobs. It incorporates several techniques to gather and analyze job information. The COMTASK Process is a combination of job analysis techniques used by several organizations including the military, Develop A CurriculUM (DACUM), Vocational-Technical Education Consortium of States (VTECS), American Telephone & Telegraph (AT&T), and the Tennessee Valley Authority (TVA).

A group of 11 persons representing five different areas provided advice on the design of COMTASK. Members of this group were selected from throughout the United States and were chosen to represent teacher educators, industrial trainers, curriculum developers, commercial publishers, and school personnel. The group was asked to identify possible users and uses of COMTASK and to discuss the input/output formats and types of data that should be collected on each job. Four major users were identified:

- Education and training community
- Business and industry
- Adult learners/workers
- Government

Procedures

The COMTASK Process begins with the selection of a job title and proceeds through a series of activities in which job/task statements and other necessary data are generated. Some of the information generated includes task statements, tasks grouped in duty areas, equipment associated with the specific job, and selected demographic characteristics of workers and work establishments. These data are used to develop questionnaires, which are then administered to persons with that job title. Responses are entered into the COMTASK computerized database. Instructions for retrieving information from COMTASK are in the COMTASK User's Guide.

The Process consists of 22 steps shown in Figure 1. Each step requires some action. Some steps also require a decision. These decisions determine the next step to be reached.

The remainder of this chapter takes you through the COMTASK Process. Steps in the accompanying figure are highlighted to directed you.

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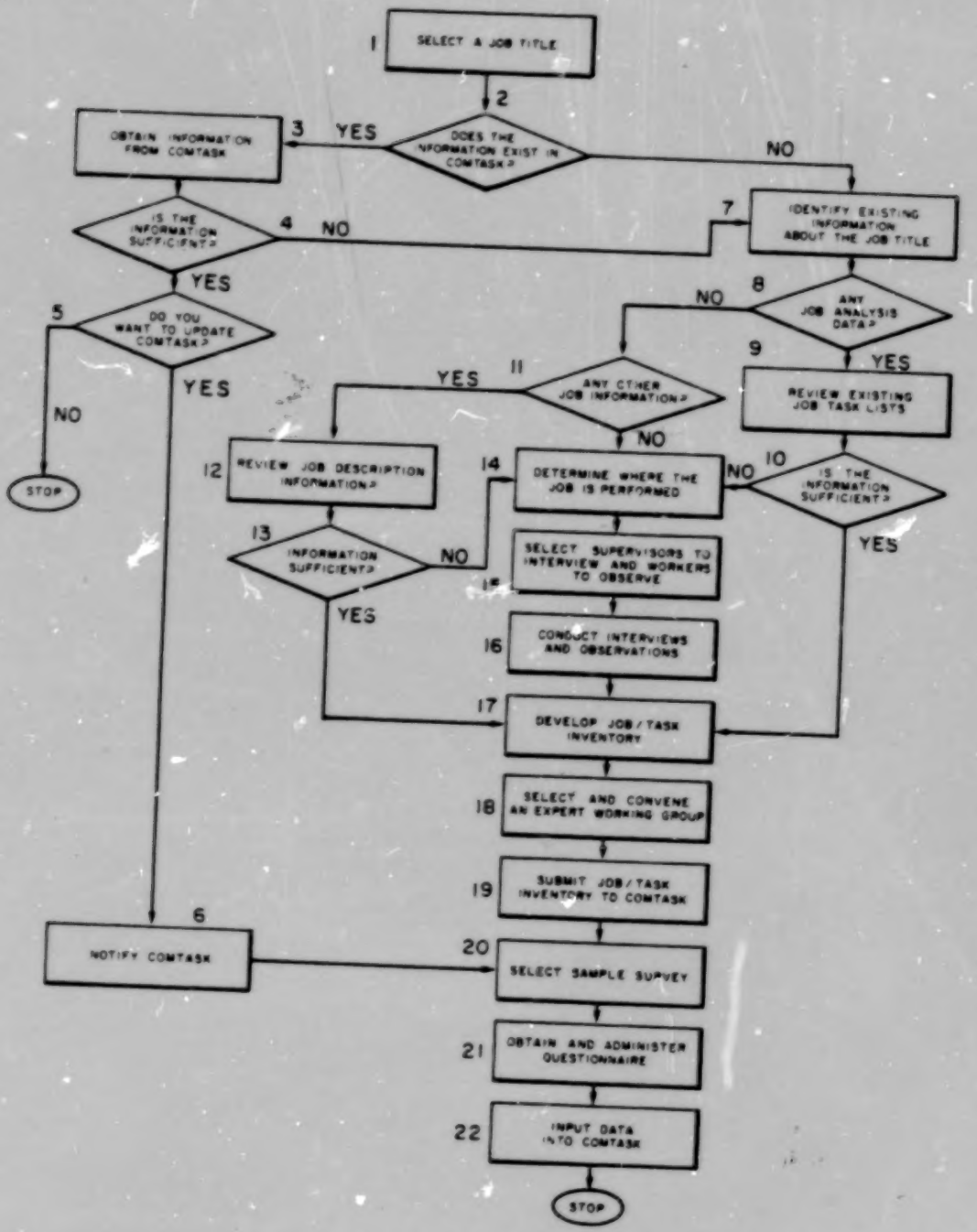
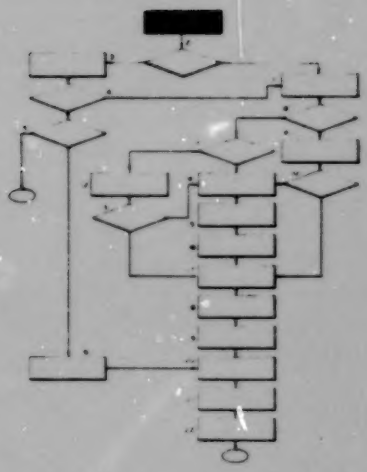
Figure 1

COMTASK INPUT PROCESS



Step 1 - Select a Job Title



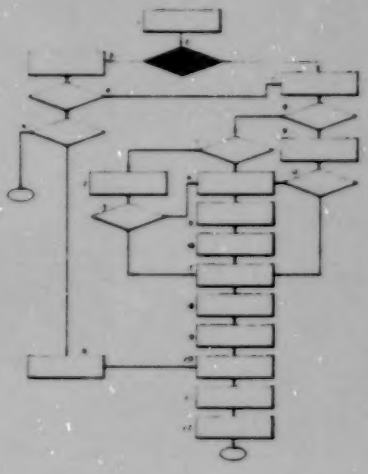
The first step in conducting a job analysis is to select an occupation from which a specific job is identified for analysis. This selection may be a result of:

- Apparent need
- Goals of the organization
- Results of a needs assessment
- Directive from management
- Suggestions from a group such as the Vocational Technical Education Consortium of States (VTECS)
- Examination of Bureau of Labor Statistics projections of areas of largest job growth
- Examination of occupational or job growth projections for your geographic region
- Consultation with the COMTASK staff
- Review of the COMTASK Bulletin Board

If you have not already done so, you should now select the job you want to analyze. When you have selected the job, you have completed this step.

PLEASE CONTINUE TO STEP 2.

Step 2 - Does the information exist in COMTASK?

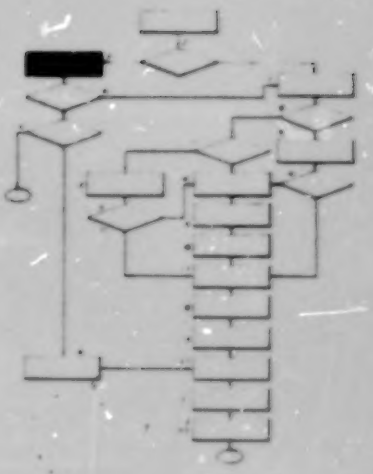


You have selected a job title. Now determine what information about this job exists in COMTASK. You can do this by conducting a search of the COMTASK database. Directions for searching the database are in the COMTASK User's Guide.

IF INFORMATION ABOUT THIS JOB EXISTS IN THE COMTASK DATABASE, GO TO STEP 3.

IF NO INFORMATION EXISTS IN COMTASK ABOUT THE JOB, PLEASE GO TO STEP 7.

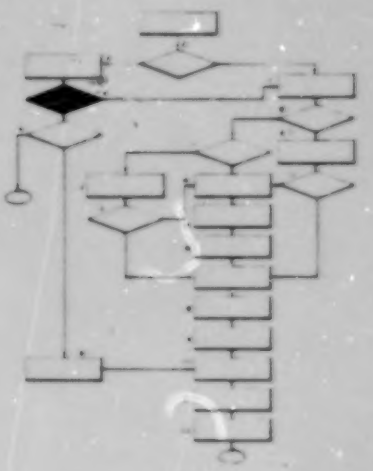
Step 3 - Obtain information from COMTASK



If information about the job title exists in COMTASK, you can now request the information. This information will contain data gathered during previous job analyses. These data will include the duties and tasks required of workers in that job. This list of duties and tasks for a specific job is called a job/task inventory. It may also include equipment used by workers as they perform the job and other pertinent information. You will also receive information about the dates of the previous job analyses, and the locations by states in which they were conducted.

PLEASE CONTINUE TO STEP 4.

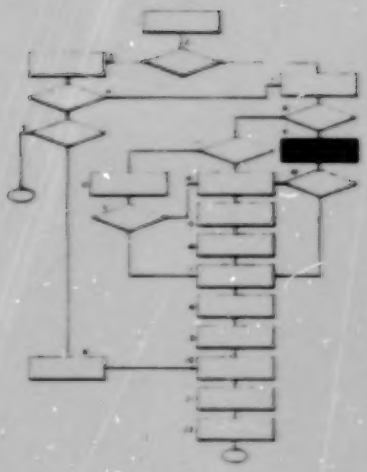
Step 4 - Is the information sufficient?



Review the job/task inventory you receive as a result of your COMTASK search. Your review should determine if the information is current, complete, and sufficient or if more information about the job is needed. "Current" means that the job has not changed significantly since the task list was prepared. "Complete" means you can determine that no tasks were left off the list.

You should examine several factors when deciding if the information is "sufficient." Consider the location of the job in question. Are there any tasks required of workers because of some unique job characteristics such as geographic location, or the size, nature, and type of organization? Has the job changed so that you think additional tasks or equipment should be included?

Step 9 - Review existing job task lists



Review the task lists and/or job inventories that have been identified to determine if you can generate a job/task. There are several different methods of reviewing materials. Use the method you feel most comfortable with in reviewing existing job/task inventories. The result of your review should help you decide if you can generate your own list for your survey.

The method used in the development of the COMTASK prototype was a content analysis review. Content analysis is the process of reviewing and analyzing all items in a specific document and entering the information in a matrix format. The information collected for one job title was divided into duties and tasks. The duties and the source of job/task listings were placed in a matrix as shown in Table 1. (See p. 17.) The source of each listing and the title used for that job were placed in the top row of the matrix. The duties for each source were placed in the columns with similar duties placed in the same row. The matrix was scanned to determine the best job/task list to use for developing the job/task inventory. The job/task list with the maximum number of duties was selected. Other job/task lists were eliminated because they contained duties too specific to a particular organization.

The method described here is presented as a suggestion. Use any method for determining which task and equipment list is best for you. The goal is to review the information so a decision can be made concerning the adequacy of the data that has been compiled.

WHEN YOU HAVE COMPLETED YOUR REVIEW AND SELECTED A JOB/TASK LIST TO USE, THEN GO TO STEP 10.

Table 1

MATRIX OF DUTIES AND SOURCES: EXAMPLE

DUTIES

TITLES AND SOURCES

Word Processing Correspondence Specialist SOURCE A	Word Processing Administrative Support Secretary SOURCE B	Word Processor SOURCE C	Word Processing SOURCE D	Word Processing Specialist SOURCE E	Word Processor SOURCE F
Organizing and planning			Organizing and planning	Judgement	Supervising the center
Supervising and implementing	Performing supervising activities	Supervising and directing	Supervising and implementing	Supervising	Implementing procedures and flow chart
Coordinating and performing personal activities for employer	Performing personal activities for boss principal		Arranging travel plans		
Performing clerical activities	Performing clerical activities	Maintain process forms records	Preparing payrolls and federal tax returns		Administrating secretarial/clerical support
Performing mail-handling activities	Performing mail-handling duties		Processing outgoing, incoming mail		
Performing transcription activities		Composing-editing proofreading	Composing correspondence	English	Transcribing documents, proofreading and editing
Performing keyboarding (typewriting) activities	Performing typing activities	Typing/keying	Performing general secretarial duties-typing technical materials and reports		
Performing library and research activities	Performing filing and library activities	Filing	Managing records, systems, establish filing systems		Filing, logging, and record keeping
	Performing accounting and bookkeeping activities	Calculating, computing and related items	Doing the banking		Managing time and tasks
		Word processing	Operating automatic typing equipment and memory typewriter	Technical information	Operating power keyboard
		Computer programming function			
		Data processing		Technical information	
		Oral Work Communications	Using legal terminology		
		Explain procedures			
		General (mail, appointments, travel, etc.)	Greeting callers, calls, doing banking		
		Equipment			
			Preparing contracts, Real Estate documents, wills, etc		Originating and completing documents originating formats

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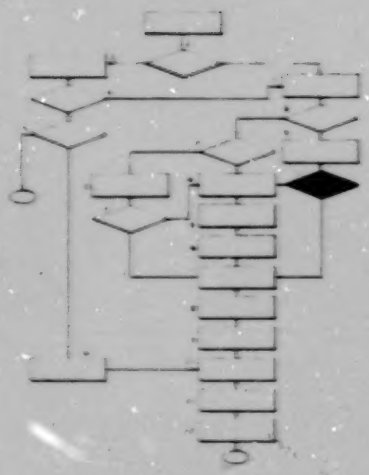
Step 10 - Is the information sufficient to develop a job/task inventory?

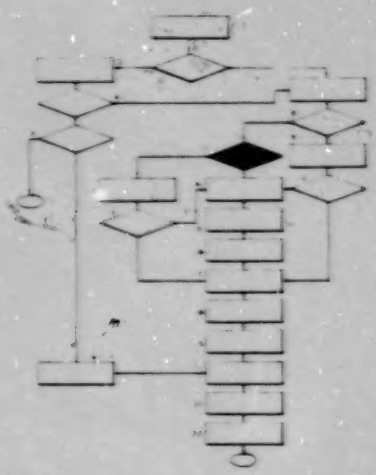


In this step you will decide if the task list you have selected contains sufficient information to use as a basis for a job/task inventory. What are the unique needs for which you are conducting the job analysis? Does the task list contain enough information to address the needs identified? Whether you are developing a job analysis for a specific business or company or for a region or state, the duty areas and task statements should be generic in nature. For example, if the task reads, "follow company x policies and procedures," then it is too specific and should be eliminated or changed to a more generic task statement such as "follow company procedures." When your job analysis has been entered into the COMTASK database, your job/task inventory will be available for use by others.

IF THE INFORMATION IS SUFFICIENT, GO TO STEP 17.

IF THE INFORMATION IS NOT SUFFICIENT, PLEASE GO STEP 14.

Step 11 - Is there any other job information?

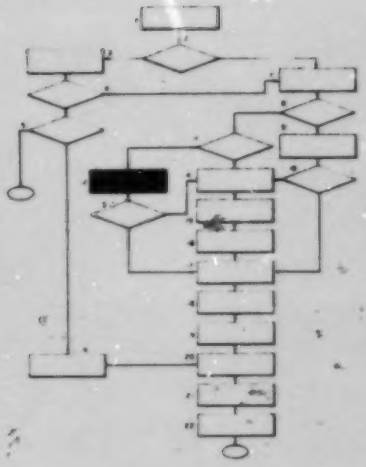


Review the information you have collected about the job. Do you have any job descriptions or training manuals for the job?

IF YOU HAVE JOB DESCRIPTIONS OR TRAINING MANUALS, CONTINUE TO STEP 12.

IF JOB DESCRIPTIONS OR TRAINING MANUALS ARE NOT AVAILABLE, PLEASE GO TO STEP 14.

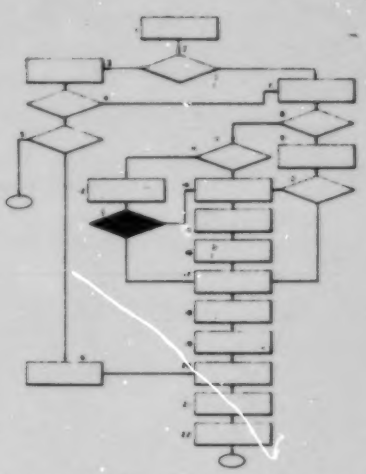
Step 12 - Review job description information and other written material



Review the material you located in the previous step to see if you can generate a list of duties, tasks, and other data to conduct a job analysis. This review will prepare you for the next decision step.

PLEASE CONTINUE TO STEP 13.

Step 13 - Does sufficient information exist to develop a task/job inventory?



During this step you must decide if the information collected is sufficient. If it is sufficient, then it will be used as the basis for the job/task inventory. The job/task inventory consists of duties and tasks that can be identified for the job in question.

The answers to the following questions will determine whether the information is sufficient:

- **Can a list of duties, tasks, and equipment be generated from the information collected?**

The list does not have to be complete but it should contain enough information to develop a general description of the job. If the answer is yes, then the information is sufficient.

- **Can additional sources of information be identified from the information already collected?**

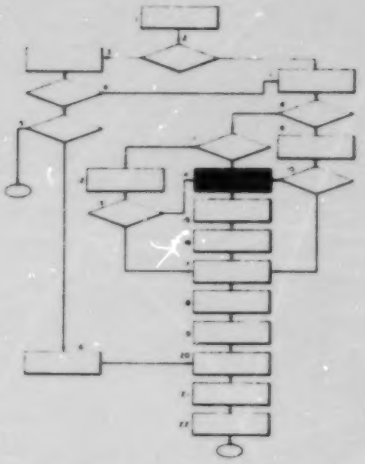
You may not have a job description but you may have collected information which will help you locate one. For example, you may have identified where the job is performed

and may be able to contact the company and obtain a job description. Examine the information available and consider its usefulness.

IF YOU WERE ABLE TO ANSWER EITHER OF THESE TWO QUESTIONS WITH A "YES," THEN SUFFICIENT INFORMATION EXISTS TO DEVELOP A JOB/TASK INVENTORY. PLEASE GO TO STEP 17.

IF BOTH QUESTIONS WERE ANSWERED "NO," THEN THE INFORMATION IS NOT SUFFICIENT TO DEVELOP A JOB/TASK INVENTORY. PLEASE GO TO STEP 14.

Step 14 - Determine where the job is performed



In order to reach this step you have been unable to locate sufficient information to develop a job/task inventory. None of the job descriptions and task lists have been adequate for your use. You must now begin the process of conducting a job analysis. You will begin your job analysis by interviewing and observing workers on the job.

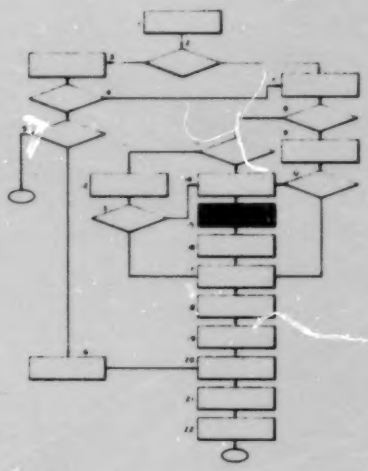
Try to locate several facilities where the job is performed. However, one facility is sufficient for your observations. Many resources available in the local community will aid this process. If you do not know where the job is performed, contact the local Chamber of Commerce. It usually has a list of companies in the area and their locations, and a description of the type of work the company performs. Additional resources include the offices of the Metropolitan or the Regional Planning Commission. These offices may have information concerning local and regional businesses and industries and their present and future functions within the community. Most states have planning commissions which might provide state-wide information.

Other resources to consider are the Vocational Education Departments at local universities, colleges, and technical training schools. Professionals working at these institutions are aware of new demands in the job market. Local labor union offices may also be contacted. If they are unable to direct you to a local business or industry, they may know where in the state, region, or nation the job is performed.

The above resources should help you identify a location where the job is performed. You will have to contact these businesses or industries directly to determine if the job is actually performed at their facility. If it is not performed there, then they may know of another location where the job is performed.

WHEN YOU HAVE IDENTIFIED LOCATIONS WHERE THIS JOB IS PERFORMED, YOU HAVE COMPLETED STEP 14. PLEASE CONTINUE TO STEP 15.

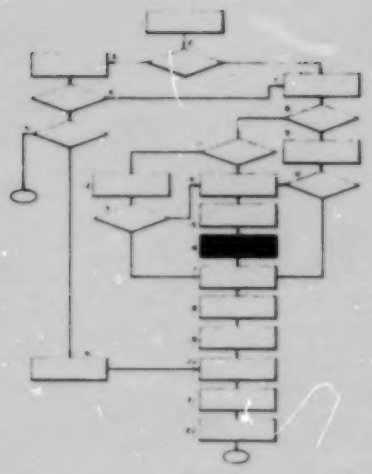
Step 15 - Select supervisors to interview and workers to observe



Once you have determined where the job is performed, contact the management (1) to obtain permission to interview supervisors and observe employees, and (2) to obtain a list of supervisors and workers performing the job to be analyzed. Select supervisors from the list and ask them to select the workers. With the help of management, set up appointments with the supervisors to begin observations of the workers.

WHEN YOU HAVE FINISHED ALL ARRANGEMENTS FOR THE INTERVIEWS AND OBSERVATION, YOU HAVE COMPLETED THIS STEP. PLEASE CONTINUE TO STEP 16.

Step 16 - Conduct interviews and observations



The interview and observation approach is a method for obtaining detailed information about a job. It permits flexibility in determining the actual duties and tasks performed by the workers. On-site interviews and observations are necessary when a current and complete task inventory is not available. "Current" means that the job has not changed significantly since the task list was prepared. "Complete" means that by reviewing the list you can determine no tasks are omitted. You will send an experienced job analyst (1) to interview supervisors, and (2) to observe and interview workers performing their work activities.

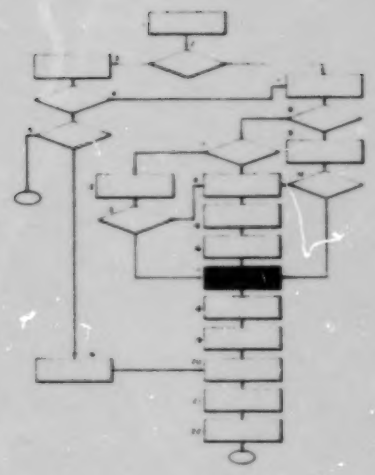
Interviews with supervisors provide data on duties and tasks performed, tools and equipment needed, and conditions under which tasks are performed. Supervisors can also tell the amount of time it takes to perform the job and the standards of performance of the task. The analyst must have some knowledge of the job being performed and must possess keen observation qualities. As the worker performs the duties and tasks, the analyst observes and may occasionally ask the worker or the supervisor questions so as to gain a better understanding of the job being analyzed.

Interviews and observations are time consuming. Their effectiveness is largely dependent upon the skills of the job analyst. The analyst must have good questioning techniques to elicit accurate information in the time available for the interviews.

The result of your interviews and observations will be a list of duties, tasks, and equipment in rough draft form. During the next few steps you will refine the list into a job/task inventory.

YOU HAVE JUST COMPLETED STEP 16. PLEASE CONTINUE TO STEP 17.

Step 17 - Develop job/task inventory



At this stage you have the rough draft of the job/task inventory. This draft was generated from one of three sources:

- Interviews and observations of supervisors and workers
- Reviews of existing job/task inventories
- Reviews of job description information and other written materials.

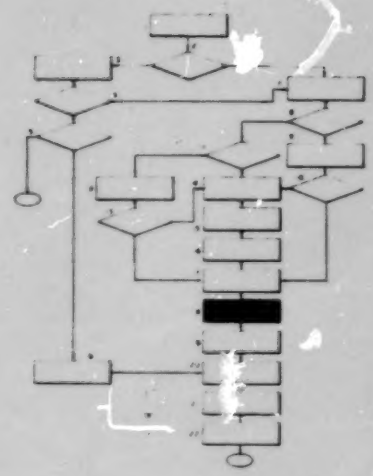
If you collected the information using the interview and observation process, you should now compile and synthesize the information to develop the job/task inventory. (See Chapter IV for information concerning writing duty, tasks, and equipment statements.) Group the information into duties, with each duty consisting of related tasks. One method of analyzing the information is to develop a chart or matrix listing all of the duties observed. (See Table 1, p.17.) A content analysis of the chart or matrix may be conducted in order to decide which duties will be included in the job/task inventory.

If you reached this step by a review of other existing job/task listings, then you were able to use what you gathered as the basis for a job/task inventory. (See Step 8, p. 15.)

If you collected your information from the third source, reviews of job description information and other written materials, then you should group this information into duty areas. (See Chapter IV for information on writing duty, task, and equipment statements.) You should generate a list of tasks associated with each duty and a comprehensive list of equipment used in the performance of the job. No matter which of the three ways you followed to reach this step, the end result of this step should be a list of duties, tasks, and equipment derived from the job observations and interviews. This list will be the job/task inventory. (A sample of a CORTASK job/task inventory is in Appendix A.)

PLEASE CONTINUE TO STEP 18.

Step 18 - Select and convene an expert working group.



A group of individuals, selected for their work experience and knowledge of a specific job, should be convened to brainstorm and generate a job/task inventory. First, the group will be asked to create a list of duties, tasks, and equipment used in the job being analyzed. The group then will examine the job/task inventory developed in the previous step and verify, organize, update, and refine it. Results of the group interaction will be used as the basis for the questionnaire used to survey workers with this job title. The outcome should be a refined version of the job/task inventory developed in Step 17.

In the COMTASK process, the experts are selected from a variety of companies where this job is performed. Try to include people from both large and small companies. The expert working group is made up of workers who have experience and knowledge of what actually is performed in the job. Their greatest effectiveness is in evaluating and making decisions about job data that have been collected from other sources.

Initially, the group meets with a facilitator who uses a group process method to discuss and extract current job information. In addition to the facilitator and the experts, the meeting should include a job content consultant and a recorder. The facilitator should be someone knowledgable about group process techniques. This may mean that the facilitator is someone other than the person who developed the job/task inventory.

The role of the job content consultant is to ensure that the group addresses all major issues associated with duties, tasks, and equipment used in this particular job. The recorder's function is to write the major issues discussed during the meeting on a large chart or chalkboard so the participants can see the information during the discussion.

The result of this interaction is a list of duties and tasks that is compared to the previously prepared job/task inventory. The job/task inventory was generated in the previous step from one of three sources:

- Information obtained and extracted from other existing job analysis data and task lists
- Information available through job description information, and written materials
- Job data information obtained from observation of workers and on-site interviews

If the job/task inventory is based on information obtained from other existing job/task inventories, then the group will probably only need to verify, update, and refine the final document. The last two sources of information may not generate a job/task inventory as detailed as the first source. As a result, more time should be given by the group of experts to organize and refine the document.

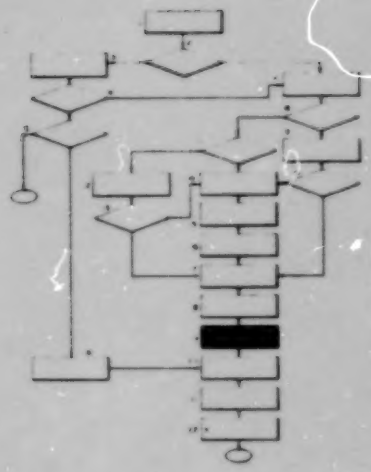
The use of the group expertise method is particularly helpful in collecting job data on new jobs or on jobs that are changing rapidly. Since the members of the group are experts in the job, their collective effort should provide information about what is currently done on the job and the specific skills and requirements needed.

The result of the group meeting will provide the content that goes into the document that will be used to generate the questionnaires. This document is prepared in the form of a list of duties, tasks, and equipment. The tasks are grouped under the duties. **No task can appear under more than one duty.** This list of duties, tasks, and equipment is the job/task inventory that will be used to generate the questionnaire administered to workers performing this job. When you have a final job/task inventory, you have completed this step.

The expert working group method gives a broad scope of job information data while the follow up survey of incumbent workers provides more comprehensive data and provides for further validation of data.

PLEASE CONTINUE TO STEP 19.

Step 19 - Submit job/task inventory to COMTASK



Send the job/task inventory to COMTAS. Please check Appendix A to see if the format is consistent with the suggested COMTASK format for job/task inventory. The COMTASK staff will examine your inventory to ensure the duties, tasks, and equipment are stated in a form that can be entered into and searched by the computer. When this list is approved, a camera-ready questionnaire will be printed and mailed to you.

PLEASE CONTINUE TO STEP 20.

Step 20 - Select survey sample

At this time you are waiting to receive a camera-ready copy of the questionnaire from COMTASK. While you are waiting, you can select the workers you plan to survey. Identify institutions similar to the ones you wish to investigate. If you wish to analyze the job of word processor at a community college, then identify similar educational institutions such as state technical schools, private and public schools, and colleges and universities. It is essential to identify the type and size of organization whether public, private, educational, small business, or large corporation.

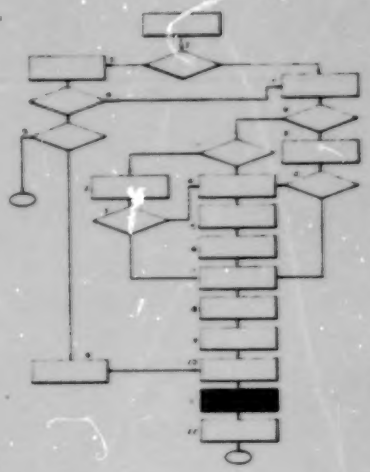
The next activity is to determine the geographic parameters from which the sample will be drawn. If job analysis data are needed for state-wide purposes, then a sample of various and diverse organizations in the state should be included in the survey. If you only want the information locally, then local parameters and even the local organization should be the only one from which the sample is drawn. The sample should be representative of the region investigated. Once the sample of the organizations has been selected, then a random sample of workers must be drawn.

Generally, the survey sample should be as large as possible. However, the size depends on the number of workers who hold positions in the particular job being analyzed. Whatever the size, an attempt should be made to obtain a sample that represents the distribution of individuals in the job. If, for example, in a survey of word processors you have three organizations that employ 5, 50, and 150 workers with that job title, then the sample representation should be proportional to 1, 10, and 30 workers selected respectively from each organization. By using representative samples, the survey results are representative of the job as a whole.

After you have identified your sample, contact officials in these companies to obtain their cooperation in surveying their employees. Then you will need to talk to the supervisors to ensure they will deliver the questionnaire to their workers and will complete the company demographic forms. Once you have selected the survey sample, the next step is to administer the questionnaire.

PLEASE CONTINUE TO STEP 21.

Step 21 - Obtain and Administer Questionnaire



You may obtain a questionnaire from COMTASK by:

- Telephone
- Mail
- Electronic Mailbox of COMTASK database

Questionnaires are designed to be completed in one hour or less. If it appears that it will take more than one hour, then the questionnaire instrument will be divided into two or three parts. Just as a random sample of the workers can provide sufficiently precise estimates of the population average, so does item sampling. Item sampling is the random selection of items from a pool of items. For example: The original questionnaire contains 200 tasks, which is too much to administer in one hour or less. The questionnaire can be divided in three parts each containing a portion of the total questionnaire. The time is reduced if each worker is

administered only a sample of the items. You should administer the questionnaires to a larger number of workers and establishments. Caution: Because you might have multiple forms for your job title survey, you need to make sure that, whenever possible, all versions of the one complete questionnaire is sent to only surveyed establishments. Once you receive the questionnaire from COMTASK you are ready to administer it. You will need to duplicate sufficient copies for your sample.

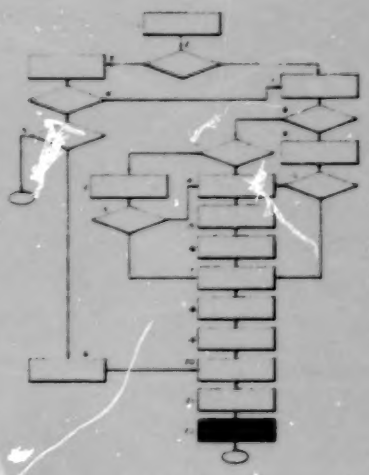
The questionnaire is administered to groups of workers with the job title you are analyzing. One method is to mail the questionnaire to supervisors or managers who agreed to participate in the survey. Make sure you include a self-addressed stamped envelope with each questionnaire so when the worker has completed the form, it can be mailed directly to you. It is vital that participation remain voluntary and that all steps are taken to ensure confidentiality of information and annonymity of subjects. Consent forms should be completed before any responses are made. (See Appendix C for sample questionnaire forms; Appendix D for company consent forms.) The supervisor's role is to make sure that the questionnaires are given to each worker who agreed to respond. Careful attention should be paid to the written instruction for administration of the questionnaire.

PLEASE CONTINUE TO STEP 22.

Step 22- Input data into COMTASK

If you want to input the results of your survey into COMTASK, then consult the COMTASK User's Guide procedures for adding or modifying a job/task inventory found under the Add Information section of the Main Menu.

If you want COMTASK to enter your results, then mail the completed questionnaires to COMTASK.



THIS IS THE END OF THE COMTASK INPUT PROCESS.

Chapter IV

Writing Duty, Task, and Equipment Statements

The job/task inventory is used to develop the questionnaires to survey the workers. The inventory is a list of duties with each duty subdivided into tasks. Also included in the inventory is equipment used to perform tasks. This chapter contains guidelines that should be followed when writing a duty, task, or equipment statement. Some of the guidelines pertain to the length of a statement. Length limitations are required because the data will be stored in a computer.

Job Title

The length of a job title may not exceed 70 characters. This includes blank spaces between words.

Duty Statement

A duty is a grouping of tasks that are related to each other by the nature of work to be performed. Duties are formed by arranging the tasks into clusters. Thus, duty statements are usually written after task statements. Duties normally begin with a gerund--a verbal noun ending in -ing.

Examples of duty statements include the following:

- Estimating materials
- Designing equipment and circuitry
- Replacing components
- Maintaining electrical controls and devices
- Performing supervisory functions
- Processing data using computer equipment
- Typing/keyboarding

When one searches the COMTASK database, the list of tasks will usually be grouped according to the duties. Formulation of clear and concise duty statements is important to the process of developing the job/task inventory.

A duty statement can be no more than 140 characters long. A character includes not only letters but spaces and numerals.

Task Statement

A task is a unit of work that constitutes a necessary step in the performance of a job and has a definite beginning and end. The standard form for a task statement follows these seven guidelines.

1. Task statements begin with a present-tense verb. The verb should be an explicit action verb rather than a passive verb that describes a process. Examples of action verbs include: calibrate, classify, edit, file, inspect, install, instruct, observe, phone, solder, test, and write. Passive verbs that are not acceptable include assure, determine, evaluate, indicate, and verify.

2. Tasks should be singular in nature. Normally a task can be performed independently of other tasks. In addition, a task statement should include only one action and one object. A task statement should be intelligible when standing apart from other task statements. Not only is the statement "Performs other duties as requested." vague but it is impossible to imagine what "other duties" might include without referring to the other tasks for that job.

3. Task statements should be consistent in the use of words. To save confusion, the same actions or objects should be described by the same verbs or nouns. All new job/task inventories must be submitted to COMTASK before they are used. This requirement will help assure that words in COMTASK are used consistently.

4. Task statements should be written in the language of the occupation. If it is known that employees at different locations use different terminology for the same thing, then the alternative term should be included in the task statement. For example, a task statement might read "Debug (correct) computer programs," if workers in one location use the word "correct" in the same way that those in other locations use "debug."

5. Each time an acronym appears in a task statement it should be spelled out. For example, "Distribute requests for proposal (RFP)." It might seem awkward to repeat the spelled out version of the acronym in each task statement but the search capability of COMTASK makes it possible that any one task may be viewed in isolation from the other tasks

for that job. Thus, each task statement must be understandable without reference to the other statements that preceeded it in the job/task inventory.

6. Redundant or qualifying phrases should not be used. Examples of such phrases are "when appropriate," "when necessary," or "as needed."

7. No more than 120 characters should be used for a task statement. Since this is approximately three typewritten lines this limitation should not be a problem. On the other hand, every effort should be made to make each task statement as succient as possible.

Equipment Statement

The term equipment is used to encompass machines and machinery, tools, and work aids. The following definitions are derived from the Department of Labor Handbook for Job Analysis.

Machines and equipment are devices which are combinations of mechanical parts designed to apply a force of work on or move materials; to process data; or to generate power, communicate signals, or have an effect upon material through the application of light, heat, electricity, steam, chemicals, or atmospheric pressure. Examples include printing presses, drill presses, manual typewriters, electric typewriters, adding machines, microcomputers, calculators, word processors, automobiles, and radio transmitters.

Tools are hand-held implements used to change or move materials. Included are all common and special-purpose hand tools and those used by the worker that are activited by outside power sources, such as electricity or compressed air. Examples include pneumatic hammers, cutting torches, electric screwdrivers, and hammers.

Work aids are miscellaneous items and supplies which cannot be considered as machines, equipment, or tools but are necessary for carrying out the activities of the occupation. Examples of work aids are technical manuals, flow charts, and blueprints.

Rules for identifying equipment are as follows:

- Equipment should be identified in generic terms. Do not use the term "Selectric typewriter" since this is brand specific. It would be better to use "electric typewriter, non-correcting" or "electric

typewriter, correcting" depending on the type used. Some terms, such as "Xerox," are so common that it is easy to forget that they are brand-specific.

- When several sizes of the same kind of tool are used, they should be combined into one statement. Thus, "Screwdrivers, phillips, assorted" is preferred to a list of each size of Phillips screwdriver.

- **Equipment names should be limited to 50 characters.**

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APPENDIX A

SAMPLE JOB/TASK INVENTORY

JOB/TASK INVENTORY

This sheet must be submitted to COMTASK along with the Job/Task inventory.

DATE:

JOB TITLE:

JOB DESCRIPTION:

IF JOB DESCRIPTION IS IN D.O.T., PLEASE GIVE THE FOLLOWING:

D.O.T. Number:

D.O.T. Title:

CIP Number:

CIP Title:

SUBMITTED BY:

ORGANIZATION:

ADDRESS:

PHONE:

Equipment

Adding machine
Automobile
Burster machine
Calculator, nonprogrammable
Calculator, programmable
Checkwriter
Collator, automatic
Collator, semi-automatic
Copy machine
Data entry and retrieval devices (i.e., CRT--not word processing)
Diamprinter
Dictation machine, endless loop
Dictation machine, phone-in
Dictation machine, portable cassette
Electronic mail cart
Filmstrip/slide projector
Folder, paper
Keypunch machine
Microfilm reader/printer
Modem
Overhead projector
Printer, dot matrix
Printer, impact (daisy wheel)
Printer, laser
Shredder/compactor, paper
Tape recorder
Telefacsimile equipment
Telephone equipment and systems
Teleprinter
Time/date stamp
Typewriter, Correcting electric
Typewriter, Mag Card
Typewriter, Manual
Typewriter, Memory
Typewriter, Non-correcting electric
Word processor connected to main frame
Word processor, microcomputer
Word processor, self-contained system
Zip Code sorter

Supervising/Training

Review work of others for compliance, completeness, and accuracy
Assign work to others
Establish work, overtime, and/or vacation schedules for workers
Schedule work flow and employee work assignments
Reassign employees
Keep employee records (attendance, files, time worked, leave)
Conduct personnel meetings
Handle personnel problems
Schedule meetings
Set up seminars
Hold seminars
Coordinate all functional activities with other affected areas
Motivate operators to accept new equipment
Make recommendations on employee performance evaluation
Evaluate employee performance
Administer appropriate action on disciplinary problems with employees
Interview and make recommendations about job applicants
Schedule interviews for staff
Train other employees
Conduct orientation for new employees
Instruct temporary workers
Explain office procedures
Explain rules and regulations for subordinates
Demonstrate equipment use
Approve bills for payment
Approve time cards for staff
Prepare termination papers and clearance forms
Prepare employment requisitions
Prepare and process purchase orders
Meet with vendors
Consult with manufacturer or vendor
Attend vendor exhibits
Attend professional seminars
Schedule maintenance of office equipment
Prepare user manuals
Prepare operator manuals

Planning/Organizing/Designing

Review and analyze new and revised procedures and implement necessary changes
Recommend changes and improvements to the system for better utilization of equipment
Prioritize work
Maintain strict time schedule on all work produced
Meet deadlines
Summarize work load
Control security of confidential/classified information
Control security of disks
Reprogram word processing machine
Change operating modes

Composing-Editing-Proofreading

Write index(es)/headings for material based on subject matter
Compose short messages, memos, remarks, and/or statements from given information
Compose correspondence from limited information
Compose phrases and sentences to correct style of material
Compose reports from given data
Compose written summary of any material including charts, graphs, numerical projections, etc.
Compose a business letter
Compose routine correspondence
Determine layout, format, and spacing for typewritten material (including files applications)
Select style of printed type (magazine/newsletter articles and photos/illustrations)
Proofread and correct final copy for spelling errors
Proofread and correct final copy for sentence structure
Proofread and correct final copy for grammatical errors
Proofread and correct final product against source material for completeness
Proofread and correct handwritten or rough draft copy using proofreader's marks
Discuss problems and questions about materials with originator of work
Edit work
Prepare minutes of meetings

Typing/Keyboarding

Type/key labels, file tabs, and routing slips
Type/key information on forms or to be printed on forms (logs, registers, records, etc.)
Type/key from shorthand notes
Type/key draft of any material using mostly alphabetical characters
Type/key information into specific data fields
Type/Key addresses into a master mailing list
Type/Key final copy from rough draft copy
Type envelopes
Maintain files of disks

This is the end of the sample job/task inventory. (NOTE: The actual inventory contained another six pages of duties and tasks.)

APPENDIX B

Input Specification and Tips

Input Specifications

COMTASK is designed to accept only data with certain specifications. The following chart contains the type of information input into COMTASK. The maximum length of each item is also listed in the chart.

Figure 2

ITEM	MAXIMUM LENGTH OF SINGLE ITEM
1. JOB TITLE	70 CHARACTERS
2. DUTIES	140 CHARACTERS
3. TASKS	120 CHARACTERS
4. EQUIPMENT	50 CHARACTERS

MANUAL TIPS

- The same task can appear under only one duty.
- The same piece of equipment may appear under more than one duty or task area.
- The length of a task statement may not exceed 120 characters. This includes blank spaces between words.
- The length of a duty statement may not exceed 140 characters. This includes blank spaces between words.
- The length of a job title may not exceed 70 characters. This includes blank spaces between words.
- The length of a specific piece of equipment may not exceed 50 characters. This includes blank spaces between words.
- If you send a job task inventory into COMTASK to be entered into the database, it must be organized in the same format as the job task inventory found in Appendix A. The list of equipment must be alphabetically ordered.
- All task statements must begin with a present tense, action verb.
- All duty statements must begin with a gerund -- a verbal noun ending in -ing.

APPENDIX C

Sample Questionnaire Instrument

Individual Participant Consent Form

for Word Processor

You are asked to participate in a research study conducted at the University of Tennessee--Knoxville. The study focuses on the tasks you perform and the equipment you use as part of your job. Your answers in this survey will help prepare people for real work settings.

Participation in this study is entirely voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You are free to discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled. DO NOT PUT YOUR NAME ON THE SURVEY FORM.

We are collecting some information about your company or organization from your supervisor. This information is also anonymous. The number in the upper right corner of your survey is the same as the number on your supervisor's form. This number will allow us to match the forms when returned. All people in the same location should have the same number. When the results are summarized, no individual or company names will be used.

When you have finished the form, place it in the attached addressed-stamped envelope. Then seal and mail the envelope.

If you have any questions, please contact me at the address or telephone number below.

Thank you for your time and your help.

Fadia Alvic
Office for Research in High Technology Education
428 Claxton Addition
University of Tennessee
Knoxville, TN 37996-3400

Telephone: (615) 974-2699

WORKER BACKGROUND INFORMATION

Please complete the information below.

1. What is your job title? _____

2. How long have you had this job title? _____years and _____months

3. How long have you worked for this company?_____years and _____months

4. What is your sex? _____ (M or F)

5. What is your age? _____ years

6. How many years of education have you finished? _____
   (If the last grade you finished was the 10th grade, write a 10; if you finished high school, put a 12; if you finished one year of college or technical school, write 13; and so on.)

7. What state do you work in? _____

8. What county or parish do you work in?_____

Instructions

This questionnaire is used to gather information about some of the tasks you perform in your job. It will also be used to determine the equipment you use in these tasks.

People who do this job have many tasks. We are only asking you about some of them. We are asking other workers about other parts of this same job. When we get all the results, we will have a complete picture of the work that people do in this job.

On the next page, is a list of choices. Starting with the third choice is a list of equipment that people have said they use in this job. The equipment is in alphabetical order and is numbered. There is room at the end to add any equipment you use that is not listed. Because you will need this list to complete the rest of the questionnaire, you might want to remove it from the book.

On each page after the list of equipment, you will find a list of tasks. Related tasks have been grouped into duties. Room has been left at the bottom of each duty to add any tasks not included. For each task, pick all of the choices from the equipment list that describe how you do that task. Write the number of these choices at the end of each task.

Example:

Choices:

1. I do not perform this task
2. I do this task, but no equipment is used
   I perform this task and use the following equipment:
3. calculator
4. telephone
5. typewriter
6. word processor
7. other (specify) microcomputer
8. other _____

Tasks:	Choices
Answer telephone	1
Write reports	3, 6, 7
Mail letters	2
Other task (specify) Make reservations	3, 4

The first task, "Answer telephone," is not performed, so a 1 is written as the choice.

The second task, "Write reports," is done using the equipment in choices 3, 6, and 7. Notice that a microcomputer was not given as a choice but was written in as choice 7.

The third task, "Mail letters," is also performed but no equipment is used; a 2 was written in the box after this task.

The last task, "Make reservations," was added by the person completing the form.

EQUIPMENT LIST
WORD PROCESSOR

Choices:
1. I do not perform this task
2. I do this task, but no equipment is used

I perform this task and use the following equipment
3. adding machine
4. addressing equipment
5. automobile

6. binder, spiral
7. binder, thermal
8. burster machine
9. calculator, nonprogrammable
10. calculator, programmable

11. calculator, ten-digit print/display
12. cassette player
13. checkwriter
14. computer, main frame
15. computer, micro or personal

16. collator, automatic
17. collator, semi-automatic
18. copy machine
19. data entry and retrieval devices (i.e., CRT--not word processing)
20. decollator machine

21. diamprinter
22. dictation machine, endless loop
23. dictation machine, phone-in
24. dictation machine, portable cassette
25. electronic mail cart

26. encoding/verifying machine
27. folder, paper
28. inserter/sealing machine
29. keypunch machine
30. microfilm reader/printer

31. modem
32. optical page reader
33. perforator
34. postage meter
35. printer, dot matrix

36. printer, impact (daisywheel)
37. printer, laser
38. projector, filmstrip/slide
39. projector, movie
40. projector, overhead

EQUIPMENT LIST
WORD PROCESSOR (CONT.)

41. shredder/compactor, paper
42. tape recorder
43. telefacsimile equipment
44. telephone
45. teleprinter

46. telex equipment
47. time/date stamp
48. typewriter, correcting electric
49. typewriter, manual
50. typewriter, memory

51. typewriter, non-correcting electric
52. word processor connected to main frame
53. word processor, microcomputer
54. word processor, self-contained system
55. zip code sorter

56. other (specify) _____
57. other _____
58. other _____

JOB: WORD PROCESSOR Form B

Duty B: Planning/Organizing/Designing

Below is a list of tasks you may do in your current job. For each task, write the number of all the choices that apply.

Tasks:	Choices
Review and analyze new and revised procedures and implement necessary changes	
Recommend changes and improvements to the system for better utilization of equipment	
Prioritize work	
Maintain strict time schedule on all work produced	
Meet deadlines	
Summarize work load	
Control security of confidential/classified information	
Control security of disks	
Reprogram word processing machine	
Change operating modes	

JOB: WORD PROCESSOR Form B

Duty C: Designing Programs/Processing Forms and Records

Below is a list of tasks you may do in your current job. For each task, write the numbers of all the choices that apply.

Tasks:	Choices
Determine which form(s) to use	
Determine information to put on form(s)	
Fill out form(s)	
Check records and forms for completeness and accuracy (including output/input data)	
Maintain logs, records, and registers of progress, flow, receipt, issue, etc.	

JOB: WORD PROCESSOR Form B

Duty H: Operating Processing Systems

Below is a list of tasks you may do in your current job. For each task, write the numbers of all the choices that apply.

Tasks:	Choices
Select program to be used on a word processor	
Select and enter transaction commands	
Select and enter plotting commands for graphic display	
Mount/dismount disc packs	
Mount/dismount tapes	
Perform recover/restart operation	
Use new hardware and software features	
Load and modify conversion tables	
Link programs	
Load program	
Duplicate compu er cards	
Keypunch computer cards	
Verify punched cards	
Sort cards by machine	
Interpret cards by machine	
Insert long insertions, record multiple carrier returns, and skip material	
Merge parts of or whole files	
Center, underline, and tabulate automatically	
Produce a copy using stop, repeat and alternate codes	
Record, delete and correct errors	
Hyphenate material	
Format material requiring tabbing	

JOB: WORD PROCESSOR Form B

Duty H: Operating Processing Systems (Continued)

Below is a list of tasks you may do in your current job. For each task, write the numbers of all the choices that apply.

Tasks:	Choices
Store, recall and revise recalled material	
Record multiple-page projects	
Playback document in final copy	
Perform search and replace	
Generate graphics	
Conduct quick search	
Perform background printing	
Perform log in and log out jobs	
Record document in form for distribution	
Arrange and assemble data to be keyed	
Create data files	
Code, correct, adjust, or modify command instructions using JCL	
Code programs from specifications using JCL	
Code while recording	
Operate standard keyboards	
Operate keyboard function keys	
Develop user defined program sequences	
Implement program sequences	
Use universal and in-house standard format manuals	
Design record processing input and output formats	
Interpret coding of format	
Compose documents to be formatted	

JOB: WORD PROCESSOR Form B

Duty H: Operating Processing Systems (Continued)

Below is a list of tasks you may do in your current job. For each task, write the numbers of all the choices that apply.

Tasks:	Choices
Use coding applicable to format	
Code documents and disks	
Insert a mag card, read, record, correct errors, tabulate, playback and remove card	
File magnetic media or hard copy according to established guidelines	
Print out from mag cards	
Gain access to systems	
Terminate operations	
Use telecommunication in word processing system	
Reformat information taken from another system	
Modify communication package to allow linkage	
Evaluate word processor system for compatibility with other system	
Transcribe micro-cassettes	
Transmit and receive information over modem or acoustic coupler	
Revise transmitted information	
Transmit data to other computer or word processor systems	
Merge information	
Establish communication link	
Monitor transmission	
Perform background transmission	
Suggest and implement unique formats	
Erase disk	
Maintain disks	

JOB: WORD PROCESSOR Form B

Duty H: Operating Processing Systems (Continued)

Below is a list of tasks you may do in your current job. For each task, write the numbers of all the choices that apply.

Tasks:	Choices
Use floppy disks to store, retrieve, and/or duplicate information	
Initialize or format disk	
Operate paper handling devices	
Operate printer	
Operate visual display stations	
Power up or power down word processing and computer equipment	
Demonstrate storage overflow, end of storage, end a tape, and end of tape features	
Operate storage function controls	
Queue outputs	
Operate output device function controls	
Retrieve information via terminal	
Run request in batch mode	
Run on-line request	
Clear equipment lock-ups	
Resolve production problems with users	
Replace ribbon cartridge on equipment	
Perform operator maintenance	
Determine sources of malfunctions	
Correct or report malfunctions	
Run diagnostic on equipment	
Consult electronic mail	
Operate electronic mail	

APPENDIX D

Company Demographic Forms

Company Participant Consent Form

For Word Processor

Thank you for agreeing to participate in a research study conducted at the University of Tennessee--Knoxville. The study focuses on the tasks employees perform and the equipment they use in their job. Your answers, and the ones from people you supervise, will help prepare people for real work settings.

Your participation in the study is entirely voluntary. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You are free to discontinue participation at anytime without penalty or loss of benefits to which you are otherwise entitled. DO NOT PUT YOUR NAME OR YOUR COMPANY'S NAME ON THE SURVEY FORM.

In addition to this letter you should have the following:

- Company Demographic Data Form
- Addressed-Stamped legal size white envelope
- Packets for each employee being surveyed. Each packet contains:
  a. Individual Participant Consent Form
  b. Worker Background Information Form
  c. Instructions
  d. Survey Form
  e. Addressed-stamped manila envelope

Please give one of the employee packets to each person surveyed. Each employee will mail his or her completed survey in the envelope that is part of the packet. Completed surveys are not to be returned to you.

All information is anonymous. A number has been placed in the upper right corner of each form so that we can match the employee and company information. All forms sent to the same location should have the same number. When the results are summarized, no individual or company names will be used.

We are pleased that you agreed to participate in this study. After you complete the two-page Company Demographic Form, please return it in the enclosed white envelope.

If you have any questions, please contact me at the address or telephone number below. Thank you for your time and your help.

Fadia Alvic
Office for Research in High Technology Education
428 Claxton Addition
University of Tennessee
Knoxville, TN 37996-3400

Telephone (615) 974-2699

COMPANY

Demographic Data Form

Please complete the following items.

1. Today's date _____

2. Does this company have facilities or branches in other cities? ___ yes ___ no

3. If yes, about how many? _____

4. Job title of workers surveyed _____

5. Number of workers in this location of the company/organization with the job title of item #4 _____

6. Size of your company

_____	less than 50	_____	501-1000
_____	51-100	_____	1001-2000
_____	101-200	_____	more than 2000
_____	201-500		

7. What state do you work in? _____ What county or parish? _____

Please complete the form on the next page.

Below are 11 major categories that are used to classify companies and organizations. Each category has been divided into sub-categories. Place a check in front of the sub-category that best describes the type of company or organization where you work. Each company/organization should be classified according to its primary activity as determined by its principal product or service.

A. AGRICULTURE, FORESTRY, AND FISHING
___01 Agricultural production--crops
___02 Agricultural production--livestock
___07 Agricultural services
___08 Forestry
___09 Fishing, hunting, and trapping

B. MINING
___10 Metal Mining
___11 Anthracite mining
___12 Bituminous coal and lignite mining
___13 Oil and gas extraction
___14 Nonmetallic minerals, except fuels

C. CONSTRUCTION
___15 General building contractors
___16 Heavy construction contractors
___17 Special trade contractors

D. MANUFACTURING
___20 Food and kindred products
___21 Tobacco manufacturers
___22 Textile mill products
___23 Apparel and other textile products
___24 Lumber and wood products
___25 Furniture and fixtures
___26 Paper and allied products
___27 Printing and publishing
___28 Chemicals and allied products
___29 Petroleum and coal products
___30 Rubber and misc. plastics products
___31 Leather and leather products
___32 Stone, clay, and glass products
___33 Primary metal industries
___34 Fabricated metal products
___35 Machinery except electrical
___36 Electric and electronic equipment
___37 Transportation equipment
___38 Instruments and related products
___39 Miscellaneous manufacturing industries

E. TRANSPORTATION AND PUBLIC UTILITIES
___40 Railroad transportation
___41 Local and interurban passenger transit
___42 Trucking and warehousing
___43 U.S. postal service
___44 Water transportation
___45 Transportation by air
___46 Pipe lines, except natural gas
___47 Transportation services
___48 Communication
___49 Electric, gas, and sanitary services

F. WHOLESALE TRADE
___50 Wholesale trade--durable goods
___51 Wholesale trade--nondurable goods
___52 Building materials & garden supplies
___53 General merchandise stores
___54 Food stores
___55 Automotive dealers & service stations
___56 Apparel and accessory stores
___57 Furniture and home furnishing stores
___58 Eating and drinking places
___59 Miscellaneous retail

H. FINANCE, INSURANCE AND REAL ESTATE
___60 Banking
___61 Credit agencies other than banks
___62 Security, commodity brokers & services
___63 Insurance carriers
___64 Insurance agents, brokers & service
___65 Real estate
___66 Combined real estate, insurance, etc.
___67 Holding and other investment offices

I. SERVICES
___70 Hotels and other lodging places
___72 Personal services
___73 Business services
___75 Auto repair, services, and garages
___76 Miscellaneous repair services
___78 Motion pictures
___79 Amusement & recreation services
___80 Health services
___81 Legal services
___82 Educational services
___83 Social services
___84 Museums, botanical, zoological gardens
___86 Membership organizations
___88 Private households
___89 Miscellaneous services

J. PUBLIC ADMINISTRATION
___91 Executive, legislative, and general
___92 Justice, public order, and safety
___93 Finance, taxation & monetary policy
___94 Administration of human resources
___95 Environmental quality and housing
___96 Administration of economic programs
___97 National security and intl. affairs

K. NONCLASSIFIABLE ESTABLISHMENTS
___99 Nonclassifiable establishments

APPENDIX E

Addresses of Job Analyses Information

For information on Task Listing Catalog and Job/Task Inventories

1. East Central Network for Curriculum Coordination
   Sangamon State University
   Springfield, IL 62708

   Phone: (217) 786-6375
   Contact Person: Rebecca S. Douglass, Director

2. Michigan Occupational Data Analysis System (ODAS)
   MSU Curriculum Resource Team
   101 Wills House
   Michigan State University
   East Lansing, MI 48824

   Phone: (517) 353-0661
   Contact Person: Chris Olsen, Project Director

3. Vocational-Technical Education Consortium of States
   Southern Association of Colleges and Schools
   795 Peachtree Street, N.E.
   Atlanta, GA 30365

   Phone: (404) 897-6100
   Contact Person: Ronald McCage, Executive Director

APPENDIX F

Work Book Supplement

Cover Page

Title of Document COMTASK Manual Supplement

Job Analysis Workbook

Name of Preparer _____

Other Persons Involved _____

Date _____

Step 1 - Select a Job Title

1. Job title _____

2. Do you have a job description for this job title?

   yes _____ (if yes, attach description to this sheet)
   no _____

3. Source of job description _____

4. Date of job description _____

5. Reason for selecting the above job title _____

   _____

   _____

6. Intended use of job analysis for job title _____

   _____

   _____

PLEASE CONTINUE

Step 2 - Does the Information Exist in COMTASK?

1. Does COMTASK have information about the job title

   yes _____ (date of entry _____)
   no _____

IF YES, GO TO NEXT PAGE, STEP 3.

IF NO, GO TO PAGE 69, STEP 7.

Step 3 - Obtain Information from COMTASK

1. What type of information exists about the job title?

Type of job information	Date Prepared	State	Organization

PLEASE CONTINUE

Step 4 - Is the Information Sufficient?

1. Is the information you received about the job title

current for your needs? yes ____ no ____
complete for your needs? yes ____ no ____
sufficient for your needs? yes ____ no ____

2. If you checked no, to one of the above choices, then you might decide that the information is not sufficient for your needs. Determine if the information is:

_____ too specific for use

_____ too general for use

_____ job has changed considerably since last input into COMTASK

_____ does not apply to our specific needs

_____ not enough information available for our use

IF YOU ANSWERED YES TO QUESTION 1 ABOVE, GO TO NEXT PAGE, STEP 5.

IF NO, GO TO PAGE 69, STEP 7.

Step 5 - Do You Want to Update COMTASK?

1. Did you elect to use the job/task inventory for your own analysis?

   yes _____
   no _____

2. Please list reasons for your decision

   _____

   _____

IF YES, PLEASE GO TO STEP 6.

IF NO, THEN YOU ARE DONE.

Step 6 - Notify COMTASK

1. Date you notified COMTASK of intention to use the COMTASK questionnaire _____

2. Did you make your request by phone or mail?

   phone _____; name of person you spoke with _____

   mail _____

3. Name of person making contact _____

4. Date COMTASK Questionnaire(s) received from COMTASK _____

PLEASE CONTINUE TO STEP 20, PAGE 83.

Step 7 - Identify Existing information about the Job Title

1. What facilities or sources of information did you use to identify information about the job title

_____ libraries
_____ books (list references)

_____

_____

_____

_____

_____

_____ government documents (list title and developer)

_____

_____

_____

_____

_____

____ library computer search of databases such as ERIC, RIVE, etc. (list databases searched)

_____

_____

_____

_____

____ corporation contacted (list date, name, phone number, and contact person)

_____

_____

_____

_____

____ colleges or universities (list department, date, phone, and contact person)

_____

_____

_____

_____

____ other (such as VTECS, Curriculum Coordination Centers, etc.; Please list organization contacted, date, phone, and contact person)

_____

_____

_____

_____

2. Type of information found about job title

job/task inventory ____
partial task listings ____
job description ____

PLEASE CONTINUE TO STEP 8

Step 8 - Are there any Available Job Analyses Data such as Job/task Inventories?

1. Did you find a job/task inventory?

Yes _____ No _____

2. If yes, check what the inventory contains.

_____ duties _____ equipment
_____ tasks _____ job description

IF YOU ANSWERED YES, THEN GO TO NEXT PAGE, STEP 9.

IF NO, THEN GO TO STEP 11, PAGE 72.

Step 9 - Review Existing Job/Task Lists

1. Method used to review material about job/task inventory

   _____ content analysis

   _____ other (describe): _____

   _____

2. How many task lists, and/or job inventories did you review?

   _____

PLEASE CONTINUE

Step 10 - Is the Information Sufficient to Develop a Job/Task Inventory?

1. Is the job/task listing sufficient to use as the basis for a job/task inventory?

   yes _____

   no _____

2. If the answer is no, what information do you still need?

   _____

   _____

   _____

   _____

   _____

IF THE INFORMATION IS SUFFICIENT, PLEASE PROCEED TO PAGE 79, STEP 17.

IF THE INFORMATION IS NOT SUFFICIENT, PLEASE TURN TO PAGE 75, STEP 14.

Step 11 - Is there any other job information?

1. Does the information contain job descriptions or training manuals?

_____ yes (list the type of information, date, source)

_____ no

Type of information	Date	Source

IF YOU HAVE JOB DESCRIPTIONS OR TRAINING MANUALS, PLEASE PROCEED TO THE FOLLOWING PAGE.

IF JOB DESCRIPTIONS OR TRAINING MANUALS ARE NOT AVAILABLE, PLEASE TURN TO PAGE 75, (STEP 14).

Step 12 - Review Job Description Information and Other Written Materials

1. Can you generate a list of duties, tasks, and other data to conduct a job analysis.

_____ yes _____ no

2. If yes, list what you have available and the source and date

Duty Lists

Source	Date

Task Lists

Source	Date

Other Lists

Type of List	Source	Date

PLEASE TURN THE PAGE AND CONTINUE

Step 13 - Does sufficient Information Exist to Develop a Job/ Task Inventory?

1. Is the information sufficient to develop a job/task inventory?

_____ yes

_____ no

2. Can a list of duties, tasks, and equipment be generated from the information collected?

_____ yes

_____ no

3. Can additional sources of information be identified from the information already collected?

____ yes

____ no

4. If yes, what are those sources?

Source	Type of information

IF YOU WERE ABLE TO ANSWER EITHER OF THESE TWO QUESTIONS WITH A "YES", THEN SUFFICIENT INFORMATION EXISTS TO DEVELOP A JOB/TASK INVENTORY. PLEASE TURN TO PAGE 79, (STEP 17).

IF BOTH QUESTIONS WERE ANSWERED "NO", THEN THE INFORMATION IS NOT SUFFICIENT TO DEVELOP A JOB/TASK INVENTORY. PLEASE TURN THE PAGE FOR FURTHER DIRECTIONS.

Step 14 - Determine Where the Job is Performed

1. Do you know where the job is performed?

_____ yes (if yes, fill in chart)

_____ no

Facility	Address & Phone	Contact Person

If no, the following chart may be useful

Resource	Phone	Contact Person
A. Chamber of Commerce		
B. Planning Commission		
C. Local or regional voc. educ. dept.		
D. University or college voc. educ. dept.		
E. Community Colleges and Technical Schools		
F. Labor Union		

Type of information available from above resource

Source A _____

Source B _____

Source C _____

Source D _____

Source E _____

Source F _____

2. The job is performed at the following locations:

Business	Address & Phone	Contact Person

WHEN YOU HAVE IDENTIFIED LOCATIONS WHERE THIS JOB IS PERFORMED, YOU HAVE COMPLETED STEP 14. PLEASE TURN THE PAGE AND CONTINUE WITH STEP 15.

Step 15 - Select Supervisors to Interview and Workers to Observe

1. Locations which are willing to participate in job analysis

Location/Address/Phone	Participating Supervisors	Participating Workers	Appt. to Begin Observation

PLEASE TURN THE PAGE AND CONTINUE

Step 16 - Conduct Interviews and Observations

1. Name of job analyst you plan to use to interview supervisors and workers

_____
(name) (title) (address/phone)

2. Number of people involved other than analyst _____

3. Attach the list of duties, tasks, and equipment which the analyst compiled from observations and interviews.

4. Method analyst used to observe and interview workers.

method	were you satisfied with method

5.

Name of Company	Date Began Interviewing	Date Interviewing Completed	Amount Time Supervisor Interview	Amount Time Worker Observed

PLEASE TURN THE PAGE AND CONTINUE

Step 17 - Develop Job/Task Inventory

1. The rough draft of the job/task inventory was generated from:

   _____ Reviews of existing job/task inventories

   _____ Interviews and observations of supervisors and workers

   _____ Reviews of job description information and other written materials

2. Attach the list of duties with tasks and equipment which is the result of one of the three methods above. Please check list of Tips, Appendix B in COMTASK Manual.

3. Date started initial work on the job/task inventory _____

4. Date completed job/task inventory _____

5. Number of people working on the development of the list _____

PLEASE TURN PAGE AND CONTINUE

Step 18 - Select and Convene an Expert Working Group

1. List of individuals who participated in the expert working group.

Name	Title	Company	Address/Phone

2. Name of facilitator

(name) (title) (address/phone)

3. Name of recorder

(name) (title) (address/phone)

4. Date and location of meeting

(date) (location) (time)

5. _____ Group generated list on their own

_____ Group reacted to the job/task inventory

_____ Group generated their job/task inventory then reacted to the list.

6. Format of meeting

_____

_____

_____

_____

7. Would you use the same format again? _____ yes _____ no

8. Changes you would make if you used the same format:

_____

_____

_____

_____

9. If no, what suggestion do you have for a different format or changes _____

_____

10. Attach the list of duties, tasks and equipment that the group developed and/or verified.

PLEASE TURN THE PAGE AND CONTINUE

Step 19 - Submit Job/Task Inventory to COMTASK

1. Did you do any more work on the job/task inventory developed in Step 18 before submitting to COMTASK?

   _____ Yes

   _____ No

2. If yes, explain what you did. _____

   _____

   _____

   _____

3. Date job/task inventory sent to COMTASK

   _____

4. Date approved job/task inventory received from COMTASK

   _____

PLEASE TURN THE PAGE AND CONTINUE

Step 20 - Select Survey Sample

1. Area from which you selected your surveyed sample _____

_____

2. Names and addresses of participating institutions

Institution	Address/Phone	Participating number of workers

3. Size of sample group _____

PLEASE TURN THE PAGE AND CONTINUE

Step 21 - Obtain and Administer Questionnaire

1. Questionnaire was obtained from COMTASK by

   mail _____

   on-line _____

2. Date questionnaire obtained. _____

3. Date mailed the questionnaire to various establishments.

   _____

4. Schedule of administration of questionaire:

DATE:	NUMBER OF WORKERS:	NUMBER OF QUESTIONNAIRES DISTRIBUTED:	NUMBER OF QUESTIONNAIRES RETURNED:
_____	_____	_____	_____

COMPANY: _____

DEPARTMENT: _____

SUPERVISOR: _____

NAME OF CONTACT PERSON: _____

NAME OF ADMINISTRATOR OF QUESTIONNAIRE: _____

DATE:	NUMBER OF WORKERS:	NUMBER OF QUESTIONNAIRES DISTRIBUTED:	NUMBER OF QUESTIONNAIRES RETURNED:
_____	_____	_____	_____

COMPANY: _____

DEPARTMENT: _____

SUPERVISOR: _____

NAME OF CONTACT PERSON: _____

NAME OF ADMINISTRATOR OF QUESTIONNAIRE: _____

DATE:	NUMBER OF WORKERS:	NUMBER OF QUESTIONNAIRES DISTRIBUTED:	NUMBER OF QUESTIONNAIRES RETURNED:
_____	_____	_____	_____

COMPANY: _____

DEPARTMENT: _____

SUPERVISOR: _____

NAME OF CONTACT PERSON: _____

NAME OF ADMINISTRATOR OF QUESTIONNAIRE: _____

DATE:	NUMBER OF WORKERS:	NUMBER OF QUESTIONNAIRES DISTRIBUTED:	NUMBER OF QUESTIONNAIRES RETURNED:
_____	_____	_____	_____

COMPANY: _____

DEPARTMENT: _____

SUPERVISOR: _____

NAME OF CONTACT PERSON: _____

NAME OF ADMINISTRATOR OF QUESTIONNAIRE: _____

DATE:	NUMBER OF WORKERS:	NUMBER OF QUESTIONNAIRES DISTRIBUTED:	NUMBER OF QUESTIONNAIRES RETURNED:
_____	_____	_____	_____

COMPANY: _____

DEPARTMENT: _____

SUPERVISOR: _____

NAME OF CONTACT PERSON: _____

NAME OF ADMINISTRATOR OF QUESTIONNAIRE: _____

DATE:	NUMBER OF WORKERS:	NUMBER OF QUESTIONNAIRES DISTRIBUTED:	NUMBER OF QUESTIONNAIRES RETURNED:
_____	_____	_____	_____

COMPANY: _____

DEPARTMENT: _____

SUPERVISOR: _____

NAME OF CONTACT PERSON: _____

NAME OF ADMINISTRATOR OF QUESTIONNAIRE: _____

DATE:	NUMBER OF WORKERS:	NUMBER OF QUESTIONNAIRES DISTRIBUTED:	NUMBER OF QUESTIONNAIRES RETURNED:
_____	_____	_____	_____

COMPANY: _____

DEPARTMENT: _____

SUPERVISOR: _____

NAME OF CONTACT PERSON: _____

NAME OF ADMINISTRATOR OF QUESTIONNAIRE: _____

DATE:	NUMBER OF WORKERS:	NUMBER OF QUESTIONNAIRES DISTRIBUTED:	NUMBER OF QUESTIONNAIRES RETURNED:
_____	_____	_____	_____

COMPANY: _____

DEPARTMENT: _____

SUPERVISOR: _____

NAME OF CONTACT PERSON: _____

NAME OF ADMINISTRATOR OF QUESTIONNAIRE: _____

PLEASE TURN THE PAGE AND CONTINUE

Step 22 - Input Data into COMTASK

1. Are you going to input the survey results into COMTASK yourself, OR are you going to mail in the results and have COMTASK input the results

_____ input directly into COMTASK

_____ date of input

_____ mail survey results into COMTASK

_____ date survey results mailed to COMTASK

THIS IS THE END OF THE JOB ANALYSIS WORKBOOK

HIGH TECHNOLOGY EDUCATION: A PROGRAM OF WORK

The following publications have been developed by the Office for Research in High Technology Education for the U.S. Department of Education's Office of Vocational and Adult Education:

At Home in the Office:

- At Home in the Office: A Guide for the Home Worker

COMTASK:

- Procedures for Conducting a Job Analysis: A Manual for the COMTASK Database
- COMTASK User's Guide

State-of-the-Art Papers:

- The Changing Business Environment: Implications for Vocational Curricula
- Computer Literacy in Vocational Education: Perspectives and Directions
- Computer Software for Vocational Education: Development and Evaluation
- Educating for the Future: The Effects of Some Recent Legislation on Secondary Vocational Education
- The Electronic Cottage
- High Technology in Rural Settings
- (Re)Training Adults for New Office and Business Technologies
- Robots, Jobs, and Education
- Work in a World of High Technology: Problems and Prospects for Disadvantaged Workers

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